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Route To: *

Subject: Mesquite dieback and Ponderosa Pine Tip Dieback at San Carlos Indian Reservation

To: Victoria Wesley,
Forest Health Specialist

On March 30 I met with you, along with Larold Aday, and Teresa Goseyun to examine causes of mesquite dieback near San Carlos, and ponderosa pine tip and branch dieback near Point of Pines. This letter describes our findings.

Mesquite dieback, involving branches of varying size, has been observed in an area just north of San Carlos. Larold and Teresa were very interested in learning the cause though they indicated that they considered the dieback to be beneficial because Mesquite is an invading species. Victoria visited the area earlier this year and found two main insects present in dead and dying branches, a wood borer and possibly a powder post beetle. During our visit we found considerable dieback in the area though no tree mortality at this point. A flatheaded woodborer was the only species associated with dying branches. We found abundant larvae and pupae in the wood in infested branches. Larger branches, approximately 2-4 inches in diameter appeared to be the most frequently infested. There was also evidence of past infestation in the area, dead branches with oval emergence holes. Furniss and Carolin in Western Forest Insects report one species of flatheaded borer, *Chrysobothris octocola*, on mesquite as well as *Acacia* and *Cercidium*. It could be this species or something else. I collected branches and have placed them in emergence chambers in order to rear out and identify the adults. *Chrysobothris* is a large genus of wood borers. Species in this genus bore in the bark and outer wood of limbs, trunks, and roots of weakened, dying and dead conifers and broadleaved trees and shrubs. No information on the life cycle is reported. During our visit I noted that this area was also used for wood cutting. I suspect that this may be related to the occurrence of the branch dieback in the same area. Wood cutters remove the largest pieces leave smaller ones that they can't use. These pieces that are left on site can provide suitable material for the borers to colonize and build up in. In addition the dry year may also be predisposing trees to attack. Since at this point the dieback is considered beneficial I don't know what additional information may be needed at this time aside from an identification. If additional assistance is needed please feel free to contact me. I will let you know of the identification of the insect when we have that.

We examined two areas with ponderosa pine branch and tip dieback in the vicinity of Point of Pines. Branch dieback is very noticeable immediately around the Point of Pines Ranger Station. The prescott scale, *Matsucoccus vexillorum* is the causal agent. This common scale insect is found throughout the Southwest, however it seems to be very persistent in certain areas for reasons that are not understood. The prescott scale spends most of its life cycle as a sessile larva feeding beneath needle bracts, and in cracks and crevices of twigs. There are two larval stages. This lasts from spring through summer. During fall, the third or pre-adult stage develops and overwinters in the same location. Early in spring motile adult males and females emerge to mate and lay eggs. Egg masses, which are covered with a fluffy white wax, look like tiny cotton balls

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and are largely located at branch nodes. Branch dieback can be associated with feeding, particularly in dry years such as this one. Sapling and pole size trees are most commonly affected. In areas where the scale is persistent, branch dieback can be rather extensive however in most sites it is rather sporadic and of little consequence. In either case mortality rates are very low. Control is generally not recommended in forest situations.

Our last stop was to examine tip dieback located in a plantation planted in the 1970's. The dieback was extensive in the area that we visited. Many of the trees were deformed, looking more like bushes than young pine trees, indicative of a persistent infestation. Several species of tip moth are found in the Southwest. I suspect that this one may be *Rhyacionia frustrana*, the Nantucket pine tip moth due to the location of pupae in affected tips. Most of the native tip moths pupate in the soil. Nantucket pine tip moth is native to the southeastern part of the US and was first reported in AZ in christmas tree plantations in the Willcox area in the early to mid 80's. I am cooperating with the Arizona State Land Department and the Arizona Department of Agriculture to uncover the current distribution of this tip moth in Arizona. Once we confirm the identification of the moth in this case we can discuss some management options if you are interested in doing so.

Tips moths are small moths in the family tortricidae. All species mine buds and terminal shoots. Injury is most severe to trees under 12 feet tall. Most species are univoltine, however the Nantucket pine tip moth is multivoltine (several generations per year). Adults emerge in early spring and lay eggs on new shoots or terminal buds. Newly hatched larvae feed for a short time at the bases of needles before mining into the buds. Once in the buds they mine the pith, feeding from the tip downward. Point of attack is generally marked by resin flow. As the infestation progresses, one can often find frass mixed with resin and webbing. Soon the infested tips die and turn brown. Pupation occurs in in the soil, at or around the base of the tree or in infested tips, depending on the species. Persistent infestations can result in stunting and deformation of pines and associated height growth loss, mortality seldom occurs. Damage is most severe in plantations, even-aged natural stands and ornamental plantings.

Several control methods have been utilized for tips moths. Pheromones have been tried experimentally to disrupt mating. In southern California, natural enemies were released to help control introduced Nantucket pine tip moth. Due to cost, insecticides have generally been used in ornamental, nursery, or christmas tree plantations. Several insecticides are registered for tip moth control.

If you have any questions concerning this letter, feel free to give me a call at (520) 556-2074.

/s/ Jill L. Wilson

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